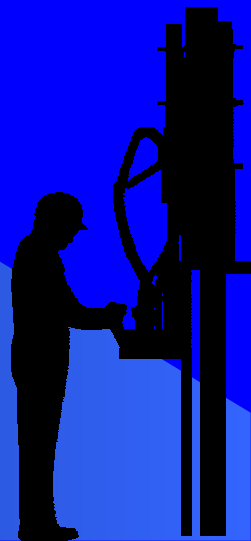
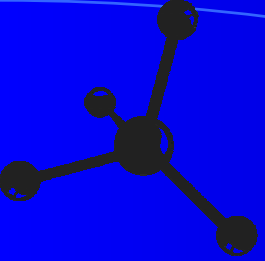


Vapor Intrusion Risk Coming to a Site Near You

Dr. Blayne Hartman
H&P Mobile Geochemistry
Solana Beach, CA





Passion of the Vapors

(Vapors Box-Office Blockbuster)

- SRO for San Diego Conference
- ~ 300 Attendees At CA Conferences
- EPA Seminars (2003 & 2004)
- Requests for Training from >10 States
- Workgroups Everywhere (ITRC, EPA-OUST, API, San Diego)
- Upcoming Fall Amherst Conference



OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance)

[Federal Register Notice](#) - November 29, 2002

Fact Sheet: Evaluating the Vapor Intrusion into Indoor Air

[Adobe PDF File](#) [17 KB]

Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance) (Complete Document)

[Adobe PDF File](#) [3019 KB]

- Draft Guidance

[Adobe PDF File](#) [516 KB]

- Tables

[Adobe PDF File](#) [353 KB]

- Appendices A-C

[Adobe PDF File](#) [972 KB]

- Appendices D-F

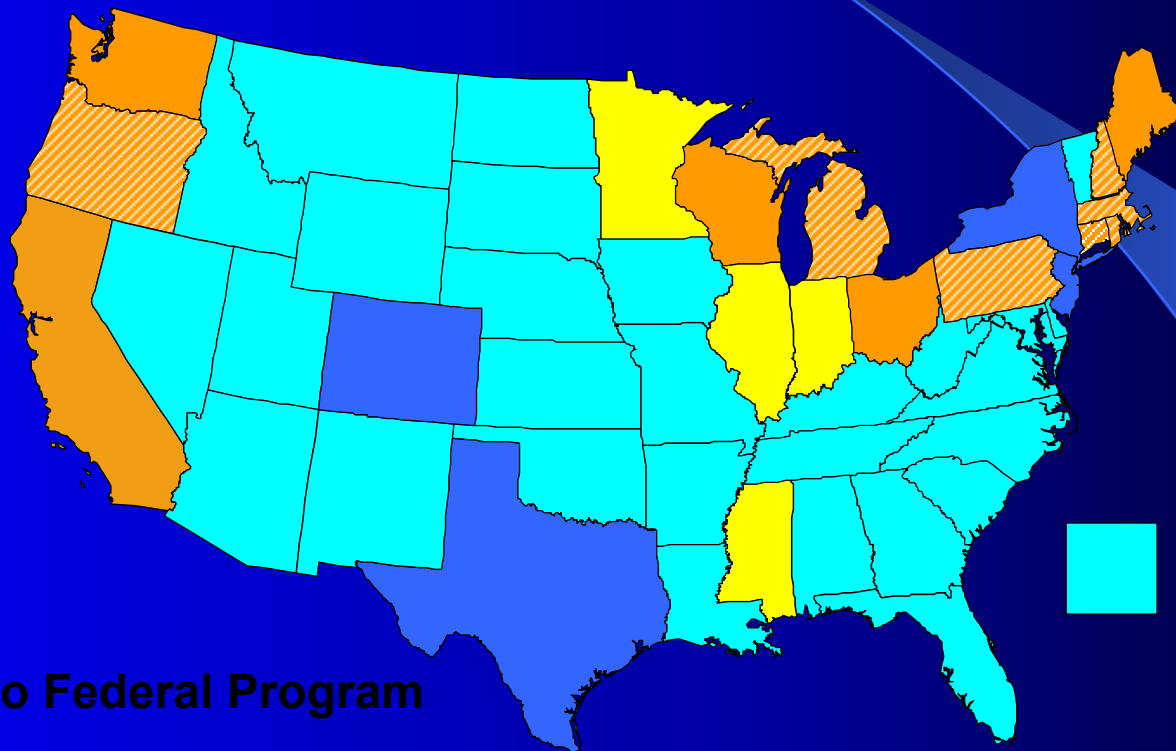
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
- Appendices G-I

[Adobe PDF File](#) [475 KB]

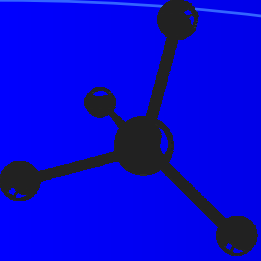
[E-Docket](#) is an on-line system that allows viewers to search the Agency's major public dockets on-line, view the index listing of the contents for the dockets included in the system, and access those materials that are available on-line. You may also submit comments on-line while this docket is open for public comment.

State Vapor Intrusion Guidance



-  Defers to Federal Program
-  Developed Program with Varied Flexibility
-  Developed Program with Varied Flexibility, Including Numerical Standards/Screening Criteria
-  Conservative Program with Substantial Regulatory Oversight

Not Evaluated



CA Sites

Agencies with Policy/Guidance:

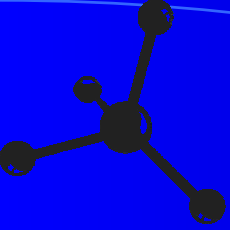
- San Diego DEH
 - Current TWG revising existing guidance
- CA-DTSC (& LA-RWQCB)
 - Soil gas collection & analysis advisory
 - Vapor intrusion policy soon
- EPA Region 9
 - Follows the EPA Draft VI Guidance
- SF-RWQCB
 - Has own RSBLs (“fail levels”)





Data Preference

- Subsurface Soil Gas (>3' bgs)
- Indoor Air
- Soil Data: DEH (likely not for long)
- GW: Used to Filter Sites
(but once in, can't use to get out)
- Sub-slab Soil Gas
- Flux Chambers – Unfamiliar Audience



Use of Modeling vs. Look-ups

- Modeling OK
 - DTSC: Custom J-E Excel Workbook
 - SD-DEH: Custom Excel Workbook
 - Region 9: Custom Excel Workbook
- Look-up Tables
 - SF-RWQCB

**Note: Ventilation Rate more Sensitive
than Soil Properties**

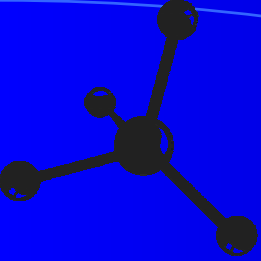




Acceptable Soil Gas Levels

(Benzene $1e-6$ Risk)

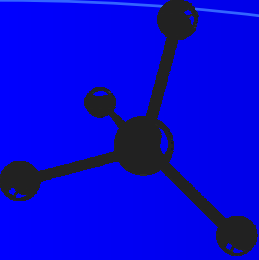
State	Alpha	1/Alpha	Fail Level ($\mu\text{g}/\text{m}^3$)
CA-DTSC	0.001	1000	84
CA-DTSC	Model	1100	95
SD-DEH	Model	11,000	900
EPA Q4	0.1	10	3.1
EPA Q5	0.002	500	155
EPA Q6	0.1	10	3.1



Sub-Slab vs. Near-Slab

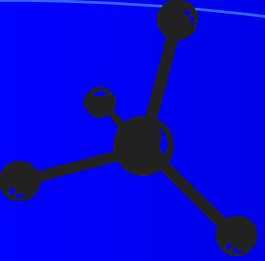
- EPA Pushing Sub-slab (worried about “ponding” effect)
- Good Comparison Database Lacking
- Most States Defaulting to Sub-Slab
- Number of Samples Unclear



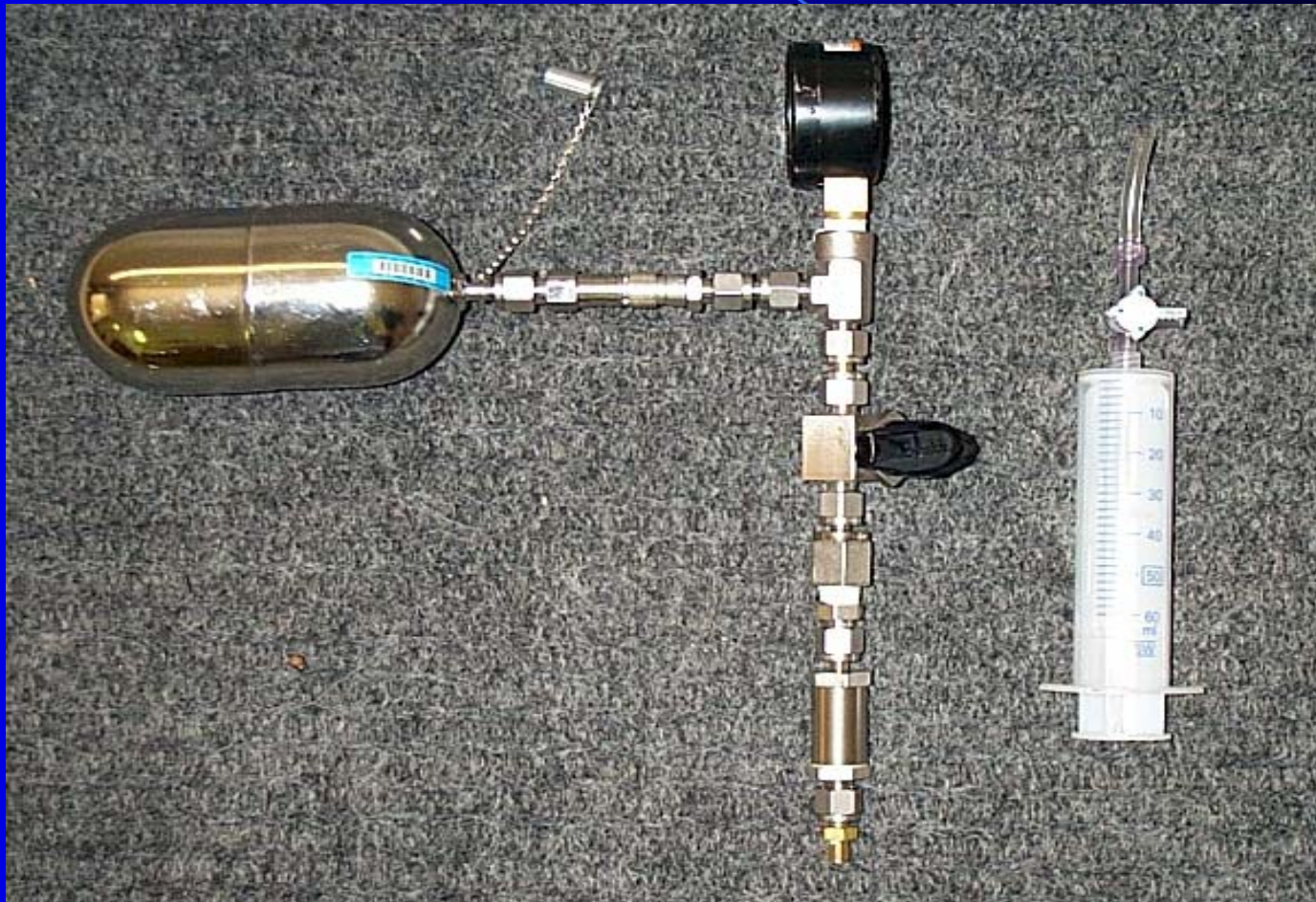


Analysis by TO-14/15 or 8260

- Both Methods Give Reliable Results
- Detection Level Discriminator:
 - TO Methods: 1 to 10 $\mu\text{g}/\text{m}^3$
 - 8260 SIM: $>10 \mu\text{g}/\text{m}^3$
 - 8260 $>100 \mu\text{g}/\text{m}^3$
- Some Regulators Have Preference



Beware the Hardware

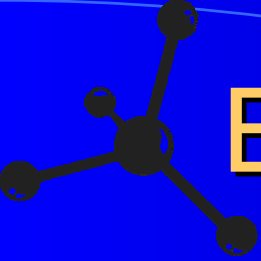




Previews of Coming Attractions

- VI Risk Pathway to Gain Increasing Attention
- Inconsistent/Contradictory/Changing Regulatory Guidance/Requirements
- Risk Reduction Due to Bio Likely to be Allowed by Vertical Profiles of SG
- Sub-slab Acceptable Levels Likely to Increase by 10x in Near-term
- EPA-OUST & DTSC Policy Due Out Soon





Existing Documents & Training

- Overview of SV Methods
 - LustLine Article on Active Soil Gas Method, 2002
 - LustLine Article on Flux Chamber Method, 2003
 - LustLine Part 3 - Scheduled for October 2004
- Regulatory Guidance
 - CA-EPA Collection Protocols
 - San Diego County Collection/Analytical Protocols

Available at www.HandPmg.com





Existing Documents & Training

- SOPs
 - Soil Gas Sampling, Sub-slab Sampling, Vapor Monitoring Wells/Implants, Flux Chambers (www.HandPmg.com)
 - EPA-ORD Sub-slab SOP–Draft, Dr. Dom DiGuilio (www.iavi.rti.org/resources)
- Other
 - EPA 2002/2003 VI Seminars (on CD) & Internet (<http://www.clu-in.org/conf/tio/vapor/resource.cfm>)
 - API Soil Gas Document (www.api.org/bulletins)